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THE NECESSARY READJUSTMENT OF RAILWAY RATES

THE interrelations of modern industry are so close and all members of the complicated economic organism are so sensitive to conditions affecting others that serious depression anywhere is incompatible with the normal activity of other lines of industry. No great industry can suffer a prolonged period of stagnation without so strongly reacting upon general business conditions as to impair confidence everywhere, with widespread losses and disaster to both labor and capital. This is particularly true of the United States, where the happy combination of absolutely free trade over an extended area of widely diverse natural conditions with the most efficient transportation system in the world, offering its services at the lowest rates, has brought about the highest degree of local specialization of industrial functions and the greatest dependence upon territorial exchanges of surplus products.

The railway industry in the United States is not only a great industry; it is the greatest save one, that of agriculture. It represents an actual capital investment exceeding one-tenth of the nation's wealth, and, under normal conditions, it gives direct employment to one and three-fourths millions of the country's most intelligent and efficient workers. Indirectly, in rail mills, locomotive works and car shops, in mines producing fuel for locomotives and ore for rails, axles, wheels and bridges, and in forests from which timber for cars and stations and ties are obtained, it gives employment to many more, to say nothing of the multitudes employed on farms, in factories and elsewhere to feed and clothe and house those previously enumerated.

The business of carrying persons and property by railway in the United States is not, to-day, in a healthy or prosperous condition. Omitting from the account the recent anti-railway agitation, which was more threatening in the vehemence of a few uninstructed advocates of drastic laws than serious in fina- accomplishment, the chief reason for this condition is unquesl tionably to be found in the fact that, in the face of a rapid and extensive decline in the value of standard money, the charges made by the railways have been so effectively controlled by custom and by law, principally the former, that they have far too sluggishly responded to the alteration in the value of the medium in which they are paid. The decrease in the value of money, which has been uninterrupted since the year 1897, has carried railway rates down with it; and this subtle, silent, unsolicited decrease has proceeded until not only the railway industry but all American industry has felt the cumulative force of an unseen injury. The obvious remedy for these conditions, which affect the business of railway transportation and react injuriously upon labor and capital in every other field, is to dissolve, for the time being, the customary restrictions upon the rate schedules and frankly to sanction such a readjustment in rates as will sufficiently, although partially, offset the loss through the depreciation of money. No railway manager should hesitate to acknowledge that the application of this remedy is impossible save through the coöperative acquiescence of the fair-minded traveling and shipping public.

The precise extent of the depreciation of the American dollar since 1897 is, of course, not measurable. The most nearly adequate statistical efforts to measure fluctuations of this sort omit some essential elements, and questions of the relative weights of different items are insoluble; but approximations are possible and helpful. The figures of the United States Bureau of Labor[1] show an increase in general prices, from 1897 to 1907, in the ratio of 897 to 1295 or 44.37 per cent, which means that $1.44 in 1907 would buy only as much as $1.00 in 1897. Another approximation, by *Dun's Review*, gives about the same result, *viz.*, an increase in the ratio of 75,502 to 107,264 or 49.37 per cent. The smaller increase in general prices disclosed by the investigations of the Bureau of Labor is equivalent to a fall in the value of money of 30.73 per cent. To assume that the inclusion of omitted items, principally those of rent, amusements, personal services and transportation, would reduce the fall to but twenty per cent is doubtless to be unnecessarily liberal. But on this low basis the fall in railway rates has been excessive.

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[1] Bulletin no. 75, Bureau of Labor, United States Department of Commerce and Labor.

TABLE I. DECREASE IN RAILWAY RATES

RAILWAY RATES	1897	1907		
	IN MONEY OF CURRENT VALUE (CENTS)	IN MONEY OF CURRENT VALUE (CENTS)	IN MONEY OF SAME VALUE AS IN 1897 (CENTS)	ACTUAL DECREASE (PER CENT)
Per passenger per mile . .	2.022	2.014	1.611	20.33
Per ton of freight per mile.	.798	.759	.607	23.93

Applying the rule laid down by Adam Smith, that "the real price of everything, what everything costs to the man who wants to acquire it, is the toil and trouble of acquiring it," the foregoing means that the average purchaser of railway transportation now obtains passenger service at a price 20.33 per cent lower and freight service at a price 23.93 per cent lower than in 1897. If, however, we follow the problem a little further, applying Adam Smith's second conclusion, that "what everything is really worth to the man who has acquired it and who wants to dispose of it or exchange it for something else is the toil and trouble which it can save to himself and which it can impose upon other people," we shall find that the transportation which it has to sell is less productive to the railway by which it is sold.

The pay-roll of the railways in 1907 amounted to $1,072,386,427 and required no less than $41.42 out of each one hundred dollars of their gross receipts. And in transportation, that is to say, in passenger-miles or ton-miles, railway labor cost much more in 1907 than ten years earlier. The following table shows, for example, that in 1897 the average payment for carrying a passenger 86 miles sufficed to pay for one day's service of the average station agent, while in 1907 a passenger had to be carried 102 miles, or 18.60 per cent further, in order to provide the

TABLE II. INCREASED

EMPLOYEES	WAGES PER DAY IN MONEY [1]		
	1897	1907	INCREASE (PER CENT)
Station agents	$1.73	$2.05	18.50
Other stationmen	1.62	1.78	9.88
Enginemen	3.65	4.30	17.81
Firemen	2.05	2.54	23.90
Conductors	3.07	3.69	20.20
Other trainmen	1.90	2.54	33.68
Machinists	2.23	2.87	28.70
Carpenters	2.01	2.40	19.40
Other shopmen	1.71	2.06	20.47
Section foremen	1.70	1.90	11.76
Other trackmen	1.16	1.46	25.86
Switchmen, flagmen and watchmen	1.72	1.87	8.72
Telegraph operators and despatchers	1.90	2.26	18.95
Employees, account floating equipment.	1.86	2.27	22.04
All other employees and laborers	1.64	1.92	17.07

railways with the same quantity and quality of assistance. The average increase in the transportation services necessary to compensate labor, as shown above, was 23.07 per cent.

Approximately eleven cents out of every railway dollar expended to meet operating expenses are paid out in the purchase of fuel for locomotives. All but a negligible portion of this fuel is coal, so that the increase in the cost of coal is one of the chief elements in the depreciation of railway dollars. Table III (page 628) shows that, to purchase fuel at the mines in the ten states from which the railways must obtain their largest supplies, they were obliged, in 1907, to perform on the average no less than 49.58 per cent more service than in 1897.

The rate at which the cost of cars has increased is indicated by data for the years 1900 and 1905, compiled by the United States Census Bureau, and presented in Table IV (page 628). While the cars built in 1905 may have been, on the average, somewhat heavier and more substantial than those built five years earlier, the change to the modern standards antedates the former year, and little of the rise in value is attributable to this

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[1] Data in these columns are from the reports of the statistician to the Interstate Commerce Commission.

Cost of Railway Labor

Wages in Passenger-Miles			Wages in Ton-Miles		
1897	1907	Increase (per cent)	1897	1907	Increase (per cent)
86	102	18.60	217	270	24.42
80	88	10.00	203	235	15.76
181	214	18.23	457	567	24.07
101	126	24.75	257	335	30.35
152	183	20.39	385	486	26.23
94	126	34.04	238	335	40.76
110	143	30.00	279	378	35.48
99	119	20.20	252	316	25.40
85	102	20.00	214	271	26.64
84	94	11.90	213	250	17.37
57	72	26.32	145	192	32.41
85	93	9.41	216	246	13.89
94	112	19.15	238	298	25.21
92	113	22.83	233	299	28.33
81	95	17.28	206	253	22.82

cause.[1] Evidently, the number of passenger-miles or ton-miles necessary to obtain the funds to pay for a new passenger or freight car was much greater in 1905 than in 1900. This suggests that, in accordance with the general trend of prices and wages, there must have been a still greater rise from 1897 to 1907. Accounting records of actual purchases, presented in Table V (page 628), show that this was true in the case of locomotives.

The increase in the cost of other staple articles purchased by the railways has equaled or exceeded the increases already noted. Data of unquestioned authority, based upon a compre-

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[1] The author of the Census Bulletin explains the rise as follows: "The average capacity of the 1,727,620 freight cars reported by the railways in 1905 was 62,000 pounds, whereas the same average for the 1,505,992 freight cars reported in 1902 was 56,000 pounds. Moreover, in 1902, 1,275,742, or 84.7 per cent of the total number of freight cars reported, had a capacity of 60,000 pounds or less; whereas, for 1905, 1,271,154, or only 73.6 per cent of the total number of freight cars reported, had a capacity of 60,000 pounds or less. These figures indicate the cause of the . . . increase in value of freight cars." A little more consideration would doubtless have convinced the writer of the report that the changes indicated by his figures are merely the cumulative result of the constant addition, during every year of a period which began before 1900, of a large number of cars above the average in size. They by no means establish a progressive increase in the size of the cars annually added.

TABLE III. INCREASED COST OF COAL FOR LOCOMOTIVES

STATES	PRICE PER TON AT MINES								
	IN MONEY [1]			IN PASSENGER MILES			IN TON-MILES		
	1897	1907	INCREASE (PER CENT)	1897	1907	INCREASE (PER CENT)	1897	1907	INCREASE (PER CENT)
Alabama	$0.88	$1.29	46.59	44	64	45.45	110	170	54.55
Colorado	1.17	1.40	19.66	58	70	20.69	147	184	25.17
Illinois	.72	1.07	48.61	36	53	47.22	90	141	56.67
Indiana	.84	1.08	28.57	42	54	28.57	105	142	35.24
Maryland . . .	.76	1.20	57.89	38	60	57.89	95	158	66.32
Ohio	.78	1.10	41.03	39	55	41.03	98	145	47.96
Oklahoma	1.34	2.04	52.24	66	101	53.03	168	269	60.12
Pennsylvania [2] . .	.69	1.04	50.72	34	52	52.94	86	137	59.30
Tennessee	.81	1.25	54.32	40	62	55.00	102	165	51.76
West Virginia . .	.63	.99	57.14	31	49	58.06	79	130	64.56

TABLE IV. INCREASED COST OF CARS [3]

CARS	1900	1905
Passenger cars		
Number built	1,369	2,446
Total value	$8,810,032	$20,486,260
Average value	$6,435.38	$8,375.41
Increase in value (per cent) from 1900 to 1905.	. .	30.15
Freight cars		
Number built	143,133	115,494
Total value	$77,240,632	$79,215,260
Average value	$539.64	$685.88
Increase in value (per cent) from 1900 to 1905.	.	27.09

TABLE V. INCREASED COST OF LOCOMOTIVES

TYPE	1897	1907	INCREASE (PER CENT)
Mogul	$10,181.00	$14,111.00	38.6
10-wheel passenger	11,026.00	15,734.00	42.7
8-wheel passenger	10,243.00	13,581.00	32.5
6-wheel switcher	9,392.00	12,098.00	28.8

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[1] Data from reports of United States Geological Survey.

[2] Bituminous coal only.

[3] Data from Census Bulletin no. 84, p. 41.

hensive investigation of all the chief sources of supply, are published by the United States Bureau of Labor.[1] The following are a few typical increases:

TABLE VI. INCREASED PRICES OF RAILWAY SUPPLIES

ARTICLES	UNIT	1897	1907	INCREASE (PER CENT)
Axes, M. C. O. Yankee	each	$0.39	$0.68	74.36
Coke, Connellsville furnace	ton	1.62	2.83	74.69
Bar iron, best refined, from mill	pound	.011	.0175	59.09
Barbed wire, galvanized	cwt.	1.80	2.63	46.11
Nails, cut 8-penny, fence and common	cwt.	1.33	2.16	62.41
Nails, wire, 8-penny, fence and common	cwt.	1.49	2.12	42.28
Steel rails	ton	18.75	28.00	49.33
Brick, common domestic	m.	4.94	6.16	24.70
Cement, Rosendale	bbl.	.75	.95	26.67
Lumber, hemlock	m. feet	11.00	22.25	102.27
Lumber, oak, plain	m. feet	36.25	55.21	52.30
Lumber, pine, yellow	m. feet	16.44	30.50	85.52
Lime, common	bbl.	.72	.95	31.94

The bulletin from which the above prices are quoted indicates that putty, Portland cement and Ames shovels are about the only exceptions to the general rule of largely enhanced prices.

In the matter of interest on the capital employed, the railways have apparently enjoyed an advantage which would seem to offset the natural tendency of interest rates to rise in response to the stimulus of augmented cost, in dollars and cents, of the commodities entering into the budget of expenditures of the average recipient of interest—the advantage, that is to say, growing out of the fact that a large proportion of railway capital is secured under long-time contracts, and that many of the contracts now in force unquestionably run back to a time when the extensive depreciation of the American dollar had not begun. This advantage is a real one, but its extent is easily exaggerated. For the purpose of throwing light upon the effect on the cost of production of railway transportation of the rise in interest rates which has characterized recent years, an analytical study of railway indebtedness (including guaranteed dividends) amounting in the aggregate, to $9,499,099,065,[2] has been made. This sum represents indebtedness now outstanding, and it includes some duplication, owing to the fact that certain of the securities represented in the aggregate are themselves based upon other securities deposited as collateral or held in the treasuries of the corporations making the secondary issues—duplication which could not have been eliminated without adding vastly to the difficulty of the inquiry and with no corresponding gain in the accuracy of the result. These data are subject to a further qualification, due to the fact that all of the issues included were not sold at par. In some cases a small premium was doubtless obtained and in other instances a slight discount was required, but nevertheless it is believed that the data fairly represent the general change in interest rates on capital loaned to railways. Of the total outstanding indebtedness of $9,499,099,065, the portion incurred during the years 1897 to 1908, including the first seven months of the last year, was $5,466,340,252, or 57.55 per cent. Table VII shows the amount of this indebtedness incurred during each year and the percentage obtained at the varying rates of interest:

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[1] See Bulletin no. 75 of the United States Bureau of Labor.

[2] The Interstate Commerce Commission gives $9,342,961,476 as the aggregate par

TABLE VII. INDEBTEDNESS AND RATES OF INTEREST

YEAR	INDEBTEDNESS INCURRED	RATE OF INTEREST (PER CENT) AND PROPORTION OF INDEBTEDNESS INCURRED AT EACH RATE							
		6½	6	5	4½	4	3¾	3½	3
1897 .	$493,408,775	. .	2.24	8.54	1.56	41.73	. .	44.92	1.01
1898 .	390,803,025	. .	.12	1.92	.05	48.08	. .	49.83	. .
1899 .	505,936,672	. .	2.59	5.77	3.14	54.91	. .	25.05	8.54
1900 .	215,039,851	. .	.53	7.40	3.71	38.94	. .	29.10	20.32
1901 .	512,559,403	. .	.35	7.58	7.38	74.55	0.07	10.07	. .
1902 .	471,578,658	. .	. .	9.53	4.23	73.80	. .	12.44	. .
1903 .	427,358,965	. .	.36	12.54	5.17	74.40	. .	5.22	2.31
1904 .	325,078,790	. .	.08	18.82	9.30	59.53	. .	12.27	. .
1905 .	635,304,659	. .	.28	10.44	11.65	57.38	. .	17.73	2.52
1906 .	514,638,170	0.07	.23	27.55	7.95	48.78	9.38	6.04	. .
1907 .	708,351,929	. .	4.28	40.86	25.10	29.70		.06	. .
1908[1].	266,281,355	. .	43.00	17.86	1.07	38.07	. .	. .	. .
Total .	$5,466,340,252	0.01	3.25	15.34	8.00	53.49	0.89	16.87	2.15

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value of the funded debt obligations of the railways of the United States. See Special Report no. 1, Bureau of Statistics of the Interstate Commerce Commission.

[1] January to July, only.

Even a cursory examination of the foregoing data shows that the average rate of interest demanded by those who supply railway capital has greatly increased. The largest aggregates of new indebtedness incurred in 1897 and 1898 were at the rate of three and one-half per cent; from 1899 to 1906, both years included, the greater portion was at four per cent; in 1907, the largest aggregate was at five per cent; while of the amount borrowed in the months of 1908 for which data are available the greater portion was obtained at six per cent. Loans at three and one-half per cent, which supplied a considerable aggregate during all of the years to and including 1906 and particularly in the earlier years of the period, had substantially disappeared before 1907, and no funds were procured at less than four per cent during the portion of 1908 which is included. The increased volume of loans at five and six per cent is equally marked. The table shows that, in 1897, the railways borrowed 87.66 per cent and, in 1898, 97.91 per cent of the new capital obtained in the form of loans at four per cent or even more favorable terms; in 1907, they were compelled to promise more than four per cent on 70.24 per cent and, in the first six months of 1908, six per cent on 43 per cent of their borrowings. The significance of these figures is made still more apparent by Table VIII (page 632), which shows, opposite the total borrowings of each year, the interest charges thereon and the average rate upon the portion of the capital which it represents. These statistics show, in the average interest rate demanded upon new loans to railway corporations, an increase from 3.90 per cent in 1897 to 4.62 in 1907 and to 5.04 in 1908. The increase in the rate from 1897 to 1907 was equal to 18.46 per cent, and from 1897 to 1908 it was 29.23 per cent. In other words, one dollar would pay interest on as much of the new capital secured by loans in 1897 as $1.29 would on the loans of 1908. The loss in power to purchase new capital, therefore, amounts to 22.62 per cent. In order to pay interest on the average $1000 borrowed in 1897, the railways would have had to carry 1929 passengers or 4887 tons of freight one mile at the average rates in force in that year; at the rates of 1908 for money borrowed and for services performed, they

TABLE VIII. RISE IN AVERAGE RATE OF INTEREST

YEAR	INDEBTEDNESS INCURRED	INTEREST CHARGES ON INDEBTEDNESS INCURRED DURING YEAR	
		AMOUNT	RATE (PER CENT)
1897	$493,408,775	$19,258,593	3.90
1898	390,803,025	14,744,141	3.77
1899	505,936,672	19,804,814	3.91
1900	215,039,851	8,073,638	3.75
1901	512,559,403	20,856,559	4.07
1902 . . .	471,578,658	19,119,182	4.05
1903	427,358,967	17,561,577	4.11
1904	325,078,790	13,571,945	4.17
1905	635,304,659	25,758,601	4.05
1906	514,638,170	21,964,215	4.27
1907	708,351,929	32,722,081	4.62
1908[1] . . .	266,281,355	13,431,067	5.04
Total . . .	$5,466,340,252	$226,866,413	4.15

would have had to carry 2502 passengers or 6640 tons of freight one mile to pay interest on the same sum. To meet the changed financial conditions the railways required an increase in the passenger service of 29.70 per cent and in freight service of 35.87 per cent.[2]

While the other costs of producing railway transportation have been advancing in the manner shown, the states have been steadily increasing the taxes levied against railway property, and both the state and federal governments, in the exercise of the powers of regulation, have made demands that have both increased expenses and reduced gross receipts. Statistics compiled by the Interstate Commerce Commission shows that in 1897 the railways paid taxes at an average rate of $235.36 per mile, and that by 1907 this average had been augmented 50.02 per cent, and was $353.09 per mile. A careful estimate indicates that the additional requirements of different kinds imposed upon the railways under regulation measures adopted during the same period now approximate $100,000,000 per annum.

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[1] January to July, only.

[2] Probably every one understands that the sums annually required for new railways and for the improvement of those already in existence far exceed those paid out to the holders of all classes of securities. The precise figures as to bonds and interest presented in table IX, on the following page, are significant and worth recording.

It has been shown: first, that since 1897 there has been a slight decrease in average rates per mile per passenger and per ton of freight; and, second, that these reductions, in connection with the extensive fall in the purchasing power of the money received from freight services, amount to a notable decline, probably exceeding twenty per cent, in the rates received by the railways. So great a decline in so short a period, coupled with the plain needs of the American railway system in respect to improvements and extensions and the obvious inadequacy of current revenues, clearly indicate the necessity for some such readjustment of rates as shall offset, in part at least, the too rapid decline.

This inference could be successfully combated only by showing affirmatively either that the general level of railway rates in 1897 was unreasonably high, or that the average rates per passenger or per ton per mile do not fairly represent the movement, or absence of movement, upward or downward, of the great body of railway charges.

The best evidence that railway charges were not excessive in 1897 is to be found in the progressive augmentation of the utilization of railway facilities. Oppressive and exorbitant charges

TABLE IX. CAPITAL BORROWED AND INTEREST PAID

YEAR	NEW CAPITAL BORROWED	INTERST ON BONDS	RATIO OF INTEREST PAYMENTS TO NEW BORROWINGS (PER CENT)
1898	$390,803,025	$237,578,706	60.79
1899	505,936,672	241,657,535	47·76
1900	215,039,851	242,998,285	113.00
1901	512,559,403	252,594,808	49·28
1902	471,578,658	260,295,847	55·20
1903	427,358,965	268,830,564	62.90
1904	325,078,790	282,118,438	86.78
1905	635,304,659	294,803,884	46.40
1906	514,638,170	305,337,754	59·33
1907	708,351,929	323,733,751	45·70
Total	$4,706,650,122	$2,709,949,572	57·58

for any commodity or service result in a restriction of the use of that commodity or service; for there is always a more or less numerous body of users who either go without the satisfaction of the particular economic want or make use of a substitute. Now the ever-ready substitute for railway transportation is to resort to the use either of articles produced nearer the points of consumption or of those which can be brought thither by water routes. The increased *per capita* use of railway transportation shows that there has been in operation no sufficient incentive to such substitution. This was true in 1897, and it is true to-day.[1]

TABLE X. INCREASED UTILIZATION OF RAILWAY SERVICES

YEAR	POPULATION	PASSENGERS CARRIED ONE MILE	TONS OF FREIGHT CARRIED ONE MILE	PASSENGERS CARRIED ONE MILE PER CAPITA OF POPULATION	TONS OF FREIGHT CARRIED ONE MILE PER CAPITA OF POPULATION
1880 .	50,155,783	5,740,112,502	32,348,846,693	114	645
1890 .	62,622,250	11,847,785,617	76,207,047,298	191	1217
1895 .	69,043,000	12,188,446,271	85,227,515,891	177	1234
1897	71,704,000	12,256,939,647	95,139,022,225	171	1327
1900 .	76,303,387	16,039,007,215	141,599,157,270	210	1856
1905 .	83,143,000	23,800,149,436	186,463,109,510	286	2243
1907 .	85,817,239	27,718,554,030	236,601,390,103	323	2757

The figures in this table show that from 1880 to 1897 an increase in population of 42.96 per cent was accompanied by an increase in railway passenger travel of 113.53 per cent and in railway freight transportation of 194.10 per cent. From 1897 to 1907 the increase in population was 19.68 per cent; in passenger travel, 126.15 per cent; and in freight transportation, 148.69 per cent.

Nor can the statement that the average ton-mile rates fairly represent the general level of railway charges be challenged with success. Among the vast number of separate railway rates there are many changes from day to day, and these include both advances and reductions. This has always been so, and it must continue to be so, unless the rate schedules are deprived of that elasticity which from the beginning of railway development has played so large a part in the great and rapid growth of interstate railway commerce and of the productive industries dependent upon widely separate markets or sources of supply. It would be impossible to tabulate all these changes for a period of twelve months, and it would be equally impossible to assign to each its proper weight in a general average which would establish the fact of an advance or reduction in charges in general. But the aggregate ton-mileage is made up of such a multitude of separate services that it is necessarily governed by the statistical generalization sometimes called "the law of large numbers." It would be difficult to conceive of a more satisfactory use of the statistical method than in the determination of the average rate per ton per mile for railway freight services as a means of testing the movement, or absence of movement, in the general level of railway charges. Table XI shows how slight has been the variation in the character of the aggregate railway freight movement during the last nine years.

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[1] Testifying before the Senate Committee on Interstate Commerce on March 18, 1898, Hon. Martin A. Knapp, chairman of the Interstate Commerce Commission, said: "The question of excessive rates—that is to say, railroad charges which in and of themselves are extortionate—is pretty nearly an obsolete question."

TABLE XI. VARIATIONS IN RAILWAY TONNAGE[1]

YEAR	PERCENTAGE OF TOTAL TONNAGE MADE UP OF DIFFERENT CLASSES OF COMMODITIES						
	PRODUCTS OF AGRICULTURE	PRODUCTS OF ANIMALS	PRODUCTS OF MINES	PRODUCTS OF FORESTS	MANUFACTURES	MERCHANDISE	MISCELLANEOUS
1899	11.33	3.12	51.47	10.89	13.45	4.49	5.25
1900	10.35	2.87	52.59	11.61	13.41	4.26	4.91
1901	10.76	2.91	51.67	11.67	13.75	4.16	5.08
1902	9.23	2.64	52.36	11.64	14.49	4.37	5.27
1903	9.56	2.63	51.56	11.67	14.39	4.69	5.50
1904	9.59	2.74	51.56	12.53	13.41	4.83	5.34
1905	9.03	2.54	53.59	11.24	13.60	4.32	5.68
1906	8.56	2.32	53.09	11.24	14.81	4.06	5.92
1907	8.62	2.29	53.39	11.38	15.41	3.89	5.02
EXTREME VARIATION . .	2.77	.83	2.12	1.64	2.00	.94	1.01

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[1] Data from reports of the statistician to the Interstate Commerce Commission. No data for earlier years.

It shows a high degree of stability in the constitution of the total tonnage, but it also shows that what change has taken place has been toward a higher quality in the average or typical unit of freight. As the data represent tonnage instead of ton-mileage, they do not throw as much light as might be desired upon the quality of the average ton-mile unit, but they undoubtedly convey some information concerning the nature of the changes in progress. There is no question that, in general, products of agriculture, animals, forests and mines are low-grade commodities, or that, on the other hand, the commodities classed as manufactures, merchandise and miscellaneous are high-grade articles. An increase in excess of the general average increase in the tonnage contributed by the first four classes would accordingly tend to lower the quality of the average ton-mile unit, while the opposite effect, that is a raising of the quality, would result if the last three classes should increase more rapidly than the increase in all tonnage. Adopting this classification, the following table shows the respective increases in high-grade and low-grade tonnage.

TABLE XII. INCREASE OF TONNAGE

CHARACTER OF COMMODITIES	TONS, 1897	TONS, 1907	INCREASE	
			AMOUNT	PER CENT
High grade . .	102,457,095	217,164,053	114,706,958	111.96
Low grade . .	339,424,528	676,020,919	336,596,391	99.17
Total	441,881,623	893,184,972	451,303,349	102.13

The considerably greater increase in the tonnage of high-grade articles indicated by the foregoing figures is hardly within the possible margin of error in the classification, but, in any case, what the figures certainly prove is the absence of any actually far-reaching change, from this source, in the character of the typical unit of traffic.

The facts that certain portions of the United States are more densely populated and more highly developed industrially than others, and that the more scantily populated and less developed regions are, upon the whole, growing more rapidly than the others, must have some influence upon the ton-mile unit. So far as this influence has been effective during the last decade, it has operated to make the typical unit of this class a more costly unit; that is to say, without any change in actual rates, the more rapid growth of traffic movement in the regions naturally characterized by the higher rates would have tended to raise the general average per ton per mile. An increase due to this cause would not mean a rise in the general level of rates. But so great is the aggregate of traffic movement that this influence, though distinctly traceable in the data made available through the labors of the statistician of the Interstate Commerce Commission, has had no great effect upon the general average.

TABLE XIII. INCREASE OF TRAFFIC MOVEMENT IN REGIONS OF HIGHER COST

TON-MILE RATE	TON-MILEAGE		
	1897	1907	INCREASE (PER CENT)
Above the average . . .	43,035,439,011	113,732,994,301	164.28
Below the average . . .	52,103,583,214	122,868,395,802	135.82
Total	95,139,022,225	236,601,390,103	148.69

The region with rates above the average in 1897 had 45.23 per cent of the total ton-mileage in that year and 48.07 per cent in the year 1907. Of the total increase in traffic movement, 49.98 per cent was in this region. The precise effect that these changes in the geographical distribution of the ton-mileage would have had upon the average ton-mile rate for the whole country is shown by the computation set forth in Table XIV. By dividing the aggregate of the products in the last column of this table by the total ton-mileage shown in the second column, an average is obtained which represents the ton-mile rate that would have resulted in 1907 had the traffic of each group in that

TABLE XIV. EFFECT OF CHANGED DISTRIBUTION OF TON-MILEAGE

GROUP[1]	TON-MILEAGE IN 1907	TON-MILE RATES IN 1897 (IN MILLS)	PRODUCT OF TON-MILEAGE OF 1907 AND TON-MILE RATES OF 1897
I	6,511,166,971	12.02	$78,264,226.99
II	63,455,243,659	6.75	428,322,894.70
III	47,944,909,002	6.05	290,369,199.46
IV	11,418,243,141	6.48	73,990,215.55
V	17,397,321,360	8.64	150,312,856.55
VI	44,318,734,155	8.55	378,925,177.03
VII . .	9,300,234,849	11.48	106,766,696.07
VIII	17,406,430,971	10.79	187,815,390.18
IX	7,546,655,555	10.40	78,485,217.77
X	11,252,450,440	12.75	143,468,743.11
United States .	236,601,390,103	. . .	1,916,720,617.41

year moved in precisely the same volume in which it actually moved and had the average rate in each group been exactly the same as they were in 1897. This shows that, under the conditions assumed, the average ton-mile rate for the whole country would have been 8.10 mills, or 0.12 mill higher than in 1897. This advance of 1.50 per cent would have been wholly due to the more rapid growth of traffic movement in the regions where rates are normally higher.

Still another deduction of the same character may be drawn from the official statistics. Since the fiscal year 1901 the Interstate Commerce Commission has published annually a classification of loaded freight cars accordingly as they have moved westward or southward on the one hand, or eastward and northward upon the other. It is a matter of common knowledge that, in general, the coarser and cheaper articles of freight traffic move eastward and northward, while the finer and more costly articles preponderate in the westward and southward movement. Therefore a relatively greater increase in the loaded freight-car movement toward the west and south means a corresponding rise in the quality of the average ton-mile. Every one knows that there was a relatively greater increase of this sort from 1897 to 1901, but, unfortunately, the statistics do not cover the years prior to 1901.

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[1] All data in this table, with the exception of the calculated figures in the last column, are from the reports of the statistician to the Interstate Commerce Commission. The groups are those adopted by the commission for the classification of railway statistics.

TABLE XV. LOADED CAR MOVEMENT

YEAR	TOTAL NUMBER OF LOADED CARS CLASSIFIED BY DIRECTION OF MOVEMENT	LOADED CARS MOVING WESTWARD OR SOUTHWARD	
		NUMBER	PERCENTAGE OF TOTAL
1901 . . .	7,241,271,038	3,272,799,201	45.20
1907 . . .	10,739,746,096	5,086,564,588	47.36

These figures show a slight increase in the westward and southward movement but are chiefly significant as clearly showing that there was, in this particular, no lowering in the quality of the ton-mile unit. It should be noted that the apparently slight increase of 2.16 per cent in westward and southward movement is equivalent to no less than 231,978,516 loaded cars.[1]

Therefore the conclusion that rates have declined in the full measure of the diminished purchasing power of the money in which they are paid is not impaired by any evidence of a lowering of the quality of the ton-mile unit; and its inevitable sequence, the conclusion that some adjustment should be made, is supported by the general recognition of the fact that the rates in force in 1897 (which have been made the basis of the comparison because it was with that year that the depreciation of money commenced) were not too high. In view of the value to the country of railway prosperity,[2] there seems no escape from the conclusion that public opinion ought to sanction a proper readjustment of railway freight rates, and that such an adjustment must restore to the railways a considerable part of the loss which they would sustain by continuing to receive payment in money of decreased value in accordance with schedules of rates that were established before the decrease began.

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[1] There is high authority for the conclusion that there has been no lowering of the quality of the ton-mile unit. The question was fully considered by Professor Henry C. Adams and Mr. H. T. Newcomb in their capacity as experts employed by the Senate Committee on Interstate Commerce, and they agreed upon a statement to that effect. See Digest of the Hearing before the Committee on Interstate Commerce of the United States Senate, compiled by Henry C. Adams and H. T. Newcomb, Senate Document no. 244, Fifty-Ninth Congress, First Session, p. 77.

[2] The loss from its absence is not always traceable. Its probable extent is merely

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suggested by the fact that the output of freight cars in the United States decreased from 284,188 in 1907 to 76,555 in 1908; that of passenger cars from 5457 to 1716, and that of locomotives from 7362 to 2342. In 1906 the railways of the United States ordered 310,315 freight cars; in 1907, 151,711; in 1908, 62,668. Assuming a cost of $700, these orders were worth $217,230,500, in 1906; $196,197,700, in 1907; and $43,868,300, in 1908.